

CLAIMS

What is claimed is:

1. A color projection display device, comprising:
 - a light source;
 - a micro-mirror unit; and
 - a projection lens;wherein the micro-mirror unit performs switching between an on state and an off state according to a driving signal, the micro-mirror unit reflecting light beams emitted from the light source to the projection lens in the on state, and not reflecting said light beams to the projection lens in the off state, the projection lens enlarging and displaying the light beams reflected by the micro-mirror on a screen for generating images thereon.
2. The color projection display device as described in claim 1, wherein the micro-mirror unit is made by a micro-electromechanical system.
3. The color projection display device as described in claim 1, wherein the driving signal is generated by a pulse width modulation driving device.
4. The color projection display device as described in claim 1, wherein the micro-mirror unit comprises a complementary metal-oxide semiconductor layer, a metal layer, a torsion layer and a micro-lens array formed on a silicon substrate.
5. The color projection display device as described in claim 4, wherein the micro-mirror unit further comprises an address electrode formed on the torsion layer for providing the driving signal to the micro-lens array.
6. The color projection display device as described in claim 4, wherein the micro-lens array comprises a red micro-mirror, a green micro-mirror and a blue micro-mirror.
7. The color projection display device as described in claim 6, wherein the driving

signal comprises two digital states; one digital state maintaining one micro-mirror of the micro-lens array in the on state, and the other digital state maintaining the micro-mirror in the off state.

8. A color projection display device, comprising: a light source, a light modulation unit for modulating colors of light beams emitted from the light source, and a projection lens for projecting the light beams reflected by the light modulation unit onto a screen; the light modulation unit comprising:
 - a micro-mirror array including a red micro-mirror, a green micro-mirror and a blue micro-mirror, each micro-mirror functioning as a color filter and capable of reflecting the light beams emitted from the light source to the projection lens; and
 - a driver circuit for providing a digital signal to the micro-mirror array to maintain each micro-mirror thereof in an on state or in an off state.
9. The color projection display device as described in claim 8; wherein the micro-mirror array is made by a micro-electromechanical system.
10. The color projection display device as described in claim 1, wherein the driver circuit is controlled using a pulse width modulator (PWM).
11. A color projection display device, comprising: a light source, a light modulation unit for modulating colors of light beams emitted from the light source, and a projection lens for projecting the light beams reflected by the light modulation unit onto a screen; the light modulation unit comprising:
 - a micro-mirror array including at least three micro-mirrors each characterized with one single original color, and functioning as a color filter and being capable of reflecting the light beams emitted from the light source to the projection lens; and
 - a driver circuit for providing a digital signal to the micro-mirror array to maintain each micro-mirror thereof in an on state or in an off state; wherein through an on-off state change of each of said micro-mirror, a combination of the

light beams defines at least 2^3 alternatives.

}